Computer software in an IT system

FOUNDATION DIPLOMA IN INFORMATION TECHNOLOGY
YEAR 1

Operating System

Link between hardware and software

Passes message and carries out instructions

Networking

Security

Memory management

Multitasking

Device Drivers

Networking

Simplify networking is a computer

Implements TCP/IP stack

Network utility programs

Device drivers for NIC

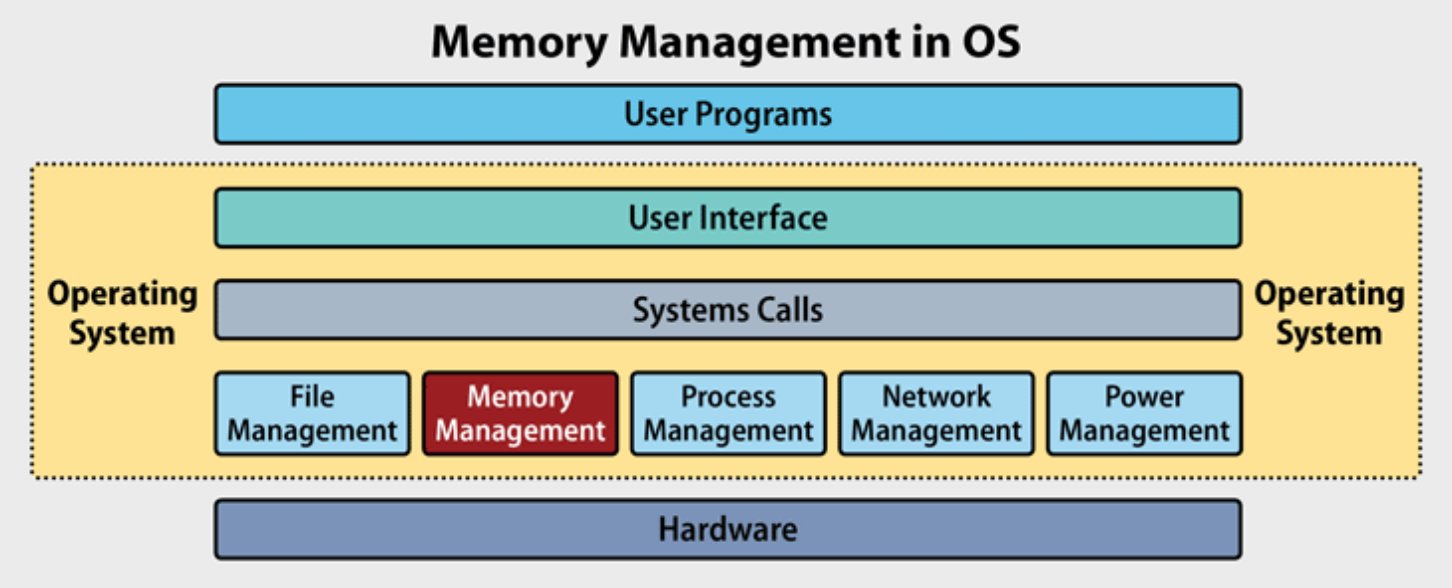
Security

FEATURES COMMONLY BUILT INTO OS

USER AUTHENTICATION

ANTIVIRUS AND FIREWALL SOFTWARE

BACKUP FACILITIES



Memory management

Decides process to allocate memory

How much to allocate

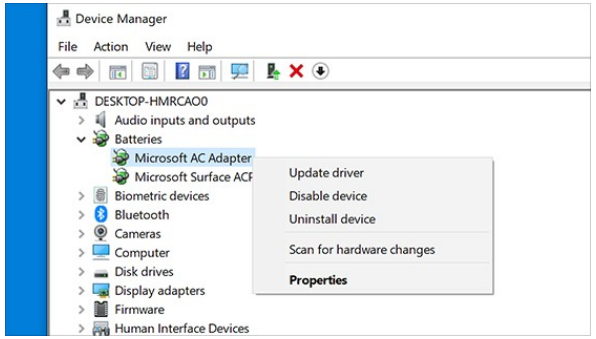
When to un-allocate

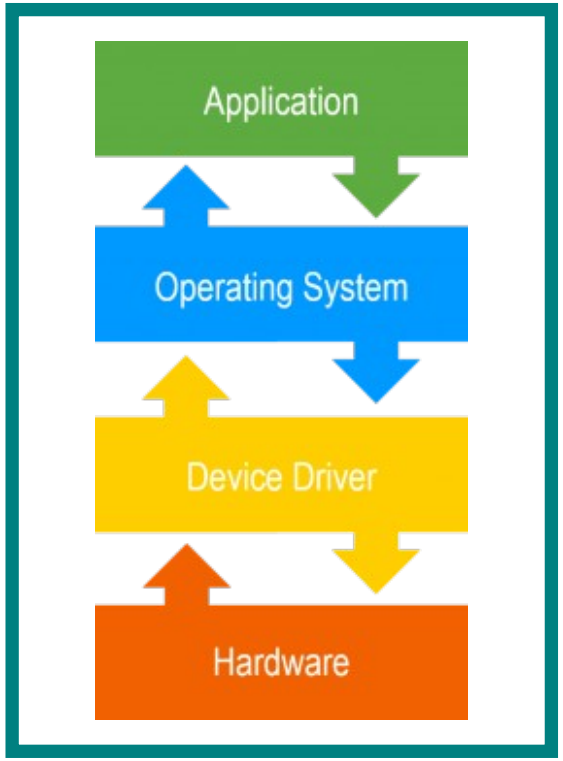
Multitasking

Helps run more than one application at once

Allocates resources to each application

- CPU, Memory, disk space etc





Device Drivers

Comes with generic drivers

Work with a variety of Peripherals

Some hardware come with specific drivers

Class Activity

What operating systems have you used?

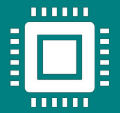
Research how two different operating systems differ in the features we looked at in this lesson.

Role of Operating Systems

the operating system has many very important functions in order to ensure your computer system works. These functions are what allows us to run the software, transmit data, communicate with peripherals and keep our system secure. That’s why the operating system is so fundamental to computer systems.

Networking

Much of your networking capabilities, including connecting to the internet, is controlled and managed by your operating system.



An example of this is that TCP/IP is built into all major operating systems. TCP/IP are the protocols that are fundamental in allowing us to transmit data over a network like the Internet.

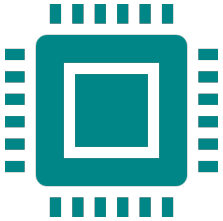
However, it also has a number of other features such as utility programs for managing and maintaining your network. This includes software like traceroute, IP config and ping.

Security

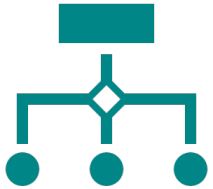
Computer systems are subject to numerous threats. Examples include viruses (along with other forms of malware) and hackers. Your operating system comes pre-installed with a range of tools to help protect your computer from these threats.

Well known examples would be built-in anti-virus and firewall software, but it also includes features like user authentication (like a login system) to prevent unauthorised access and backup facilities to recover from the impact of these threats.

Memory Management



Your operating system and the different software applications you are running all need to be loaded into main memory in order for them to run. Your computer has only a finite amount of memory to share out though.

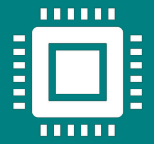


It is the responsibility of your operating system to assign memory to each of your applications running in order to allow them to run. This involves both the allocation of memory to the various applications, as well as the deallocation of the memory when the application is no longer in use.

It also performs additional functions for the efficient use of memory. An example of this is paging. This is where the operating system assigns applications to “virtual memory”. Virtual memory is a portion of the hard disk that is used as an extension of your main memory. This portion of the hard disk is known as the “pa

Multi-Tasking

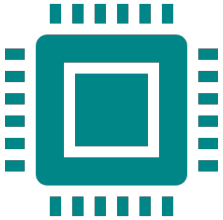
When running several different applications at once, the operating system plays an important role in managing your system’s resources in order to allow this to happen.



Every time you open a new software application it needs to assign resources, like processing time and memory. This is made more complex because processors only perform a single task at a time. The operating system will assign small amounts of the processor time to each application though and this happens so quickly it appears that they are running simultaneously.

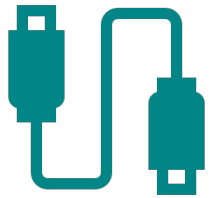
Obviously, you only have a limited amount of memory and processing power on your computer, which is why if you open too many applications your computer will slow down significantly.

Device Drivers



our operating system is responsible for allowing peripheral devices to input and output data to the computer system. In order to do this, it uses device drivers.

A device driver is a small software program that controls the devices you connect to your computer. There are different drivers for different devices and your operating system comes pre-installed with a range of generic drivers to allow for a number of different devices to communicate with your computer.



You can also install additional device drivers for other specific devices not covered by the pre-installed ones.